REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1 and 3-14 are pending in the present application. Claims 1 and 3-12 are amended by the present amendment.

In the outstanding Office Action, the previous rejections were withdrawn; Claims 1-7 and 9-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Sugita et al. (U.S. Patent No. 4,687,712, herein "Sugita") in view of Hokkyo et al. (U.S. Patent No. 6,387,483 B1, herein "Hokkyo") and Michaelsen et al. (U.S. Patent No. 4,245,008, herein "Michaelsen"); Claim 8 was rejected under 35 U.S.C. § 103 as unpatentable over Sugita in view of Hokkyo, Michaelsen, and Lal et al. (U.S. Patent No. 5,834,111, herein "Lal"); and Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Sugita in view of Hokkyo, Michaelsen, and Kanbe et al. (U.S. Patent No. 6,221,508 B1, herein "Kanbe").

Applicant thanks the Examiner for the courtesy of an interview extended to Applicant's representative on March 18, 2004. During the interview the rejections of the claims under 35 U.S.C. § 103(a) were discussed. In addition, amendments to Claim 1 were discussed and the Examiner indicated that the claim amendments would likely overcome the 35 U.S.C. § 103(a) rejection over the combination of Sugita and Hokkyo. This response sets forth the claim amendments discussed with the Examiner and additional claim amendments. Arguments presented during the interview are reiterated below and additional arguments are presented.

Claims 1-7 and 9-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Sugita in view of Hokkyo and Michaelsen. That rejection is respectfully traversed.

Independent Claim 1 is amended to recite "at least five soft magnetic layers" instead of "at least two soft magnetic layers" and "one soft magnetic layer of said at least five soft magnetic layers is directly formed on said non-magnetic substrate." The claim amendments find support in the specification at page 25, line 15, to page 26, line 24, and in Figure 2. No new matter is believed to be added.

Amended independent Claim 1 is directed to a magnetic recording medium having a non-magnetic substrate, at least five soft magnetic layers, and at least one magnetic recording layer formed on the substrate via the at least five soft magnetic layers. One soft magnetic layer of the at least five soft magnetic layers is directly formed on the non-magnetic substrate. In addition, a surface roughness of the magnetic recording medium is at most 50 Å.

In a non-limiting example, Figure 2 shows the non-magnetic substrate 14, the at least five soft magnetic layers 5, 7, 9, 11, and 13, and the at least one magnetic recording layer 4.

The outstanding Office Action recognizes at page 5, item 11, that "Sugita does not teach a magnetic recording medium wherein the medium has a surface roughness Ra of < 50 angstroms," as required by Claim 1. The outstanding Office Action relies on Hokkyo to cure that deficiency. However, the Office Action has not established a proper basis for the rejection based on Sugita and Hokkyo.

As stated in MPEP §2142:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

The outstanding rejection under 35 U.S.C. § 103(a), particularly with respect to the claim feature directed to the surface roughness of the magnetic recording medium being at most 50 Å, does not meet at least the first basic criterion noted above. No suggestion or motivation has been noted either in Sugita or in Hokkyo for adding a Cr layer as disclosed in Hokkyo under two or four thin permalloy layers as disclosed in Sugita. Hokkyo only discloses improving a surface roughness of a single ***thick*** soft magnetic layer and not of two or four thin permalloy layers as in Sugita.

Further, Hokkyo does not provide any indication that improving a surface roughness of one layer of two or four soft magnetic layers would improve the roughness surface of the whole recording medium. In other words, there is no indication on record that a better surface roughness of one layer in a plurality of layers propagates through the plurality of layers to improve the overall surface roughness of the magnetic medium, as assumed in the outstanding Office Action. In addition, there is no indication on record that adding a Cr layer under a ***thin*** soft magnetic layer would improve the surface roughness of that layer. Hokkyo teaches only improving the surface roughness of a ***thick*** layer.[1]

Furthermore, Hokkyo discloses only improving the surface smoothness of a thick FeSiAl or FeTaN layer (see column 8, line 65, column 9, line 26, and column 12, lines 49-50) and Sugita discloses only two or four permalloy (NiFe) layers. Thus, Applicant respectfully submits that there is no indication on the record that the permalloy layers in Sugita respond to a Cr underlayer similar to the FeSiAl or FeTaN layers in Hokkyo, as asserted by the outstanding Office Action. To the contrary, Hokkyo states at column 1, lines 37-44, that "crystalline orientation of the perpendicular magnetizing film 58 is degraded when the soft magnetic underlayer film 56 of NiFe ... [is] formed." Further, Hokkyo states in the same

[1] Hokkyo, column 9, lines 24-28.

paragraph that "to prevent this, it is reported to use a Sendust film (FeSiAl alloy)." Thus, Applicant respectfully submits that Hokkyo clearly teaches away from Sugita.

In such ways, it is respectfully submitted that no *prima facie* case of obviousness has been established in that respect.

Moreover, Applicant respectfully submits that neither Sugita nor Hokkyo teaches or suggests at least five soft magnetic layers as now further required in independent Claim 1.

Sugita specifically discloses in Figures 1-3 a recording medium having one, two, and four permalloy layers, respectively, and Hokkyo shows in Figure 2 a recording medium having only one thick layer 116. In addition, Michaelsen, although not used against Claim 1, also does not teach or suggest at least five soft magnetic layers, as required in Claim 1.

Further, amended Claim 1 recites that one soft magnetic layer of the at least five soft magnetic layers is directly formed on the non-magnetic substrate. However, Hokkyo shows in Figure 2 that the thick soft magnetic layer is not formed directly on the substrate, but a Cr layer is formed between the substrate and the thick soft magnetic layer. Hokkyo must have another layer between the substrate and the thick soft magnetic layer to achieve a surface smoothness. Therefore, by modifying the two or four soft magnetic layers of Sugita to have a Cr layer as in Hokkyo between the substrate and the two or four soft magnetic layers, the modified device would lack the feature of having one soft magnetic layer directly formed on a substrate, as required by independent Claim 1.

Accordingly, it is respectfully submitted that independent Claim 1 and each of the claims dependent therefrom patentably distinguish over the combination of Sugita, Hokkyo, and Michaelsen.

Claim 8 was rejected under 35 U.S.C. § 103(a) as unpatentable over Sugita, Hokkyo, Michaelsen, and Lal. That rejection is respectfully traversed.

The outstanding Office Action relies on Lal for teaching a magnetic recording medium having a substrate, a chromium underlayer formed on the substrate, and two magnetic layers formed on the chromium underlayer. However, Lal does not overcome the deficiencies of Sugita, Hokkyo, and Michaelsen discussed above. In addition, Claim 8 depends on independent Claim 1, which is believed to be allowable as discussed above. Accordingly, it is respectfully submitted that dependent Claim 8 is also allowable.

Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Sugita, Hokkyo, Michaelsen, and Kanbe. That rejection is respectfully traversed.

The outstanding Office Action relies on Kanbe for teaching a magnetic storage apparatus that includes various elements. However, Kanbe does not overcome the deficiencies of Sugita, Hokkyo, and Michaelsen discussed above. In addition, Claim 14 depends directly on independent Claim 1, which is believed to be allowable as noted above. Accordingly, it is respectfully submitted that dependent Claim 14 is also allowable.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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